

In the Specification

Please replace the Abstract with the following rewritten abstract:

A method of automatically focusing a microscope ~~in which a having a light source, an objective lens or lens system, a means to direct incident light through the objective lens or lens system to be reflected by the object, an aperture to limit the spatial extent of the incident light and serve as an illumination pupil, a means to direct at least some of the reflected light to an imaging system, and an imaging system to image the reflected light so directed is described.~~ In accordance with the invention a beam of light is directed from a light source through an objective of the microscope system to an object whereby light is reflected from the surface thereof; reflected light is collected and directed to an imaging system, ~~wherein the~~ The incident beam of light is limited in spatial extent by imaging an aperture to form an illumination pupil, the centroid of illumination of the illumination pupil is aligned with the incident optical axis of the instrument, ~~and The~~ reflected light is ~~split in~~ projected to the imaging system ~~into comprising at least one pair of images from eccentric sections of an imaging pupil displaced from the optical axis in opposite directions, and wherein the~~ The separation of the images thereby produced is determined to provide an indication of the object distance. A focusing system implementing the method and a microscope fitted with such a system are also described.

Please replace the paragraph starting on page 1, line 25, with the following rewritten paragraph:

4) that such systems may employ a variety of ~~artefacts~~ artifacts which are not a part of the object under investigation, some of which may contribute to false readings.

Please replace the paragraph starting on page 4, line 4, with the following rewritten paragraph:

First, these systems generally assume that the object is a mirror normal to the optical axis, and sample a limited region (or in some cases regions) of the object under investigation. Localized topography of the sample can ~~results~~ result in false readings. Reflectance variation of the sample, etc. can cause degradation of the focus information that is obtained, as it changes the character of the light beam that is being measured. There are many situations in which these degradations are not present or are negligible, and some of these auto-focus systems work very well within a limited context. However, in the case of overlay metrology

the requirement to achieve extreme focus sensitivity necessitates elimination of as many potential sources of uncertainty as possible.

Please replace the paragraph starting on page 10, line 23, with the following rewritten paragraph:

Specifically, such a system for a microscope comprises a light source, an objective lens system, a means to direct incident light through the objective lens to be reflected by the object, an aperture to limit the spatial extent of the incident light and serve as an illumination pupil with the centroid of illumination on the optical axis, a means to direct reflected light from the object to an imaging system, and an imaging system, and the system further comprises a means to project reflected light to the imaging system comprising at least two images from eccentric sections of an imaging pupil differentially displaced from the optical axis, and a means to measure the separation of the images thereby produced to provide an indication of the object distance. Additionally there is a means to adjust mechanically the separation of the object being observed from the imaging objective lens, under the control of the focus system. For example there is provided a closed loop control system (CS, shown in Fig. 1) which provides the ability to adjust the mechanical position of the object based on processing the output signal from the focus system detector.

Please replace the paragraph starting on page 12, line 10, with the following rewritten paragraph:

A light source 21 directs a beam of light along the light path represented by the dotted line through an illumination lens 23 and objective lens 25 onto an object 26a at the object plane 26. The top focal plane of objective is identified by reference 24. Reflected light passes through the beam-splitter 15. The reflected light is directed via a relay optical system consisting in this example of a first imaging lens 27 onto a dihedral mirror 28. It is through the dihedral mirror that the essential feature of the invention is enabled. The dihedral mirror simultaneously splits the illumination pupil into two and redirects the light via the second imaging lens 29 to different sections of the focus CCD 11, comprising the first imaging region 31 and the second imaging region 32.